STRUCTURAL NOTES

COPIES OF PUBLICATIONS REFERENCED IN THESE GENERAL STRUCTURAL NOTES ARE AVAILABLE FOR REVIEW AT SCHAEFER. CONTRACTORS UNFAMILIAR WITH THESE PUBLICATIONS MUST REVIEW THEM PRIOR TO CONSTRUCTION.

GOVERNING CODE

VIRGINIA BUILDING CODE – 2012 (REFERENCES IBC 2012 & ASCE-7 2010).

DESIGN LOADS

1. ROOF LOAD:

A.	MINIMUM COMBINATION OF WIND LOAD, LIVE LOAD, RAIN LOAD, OR SNOW LOAD (Pf)	20	PSF* **
B.	ROOF MEMBRANE & INSULATION	2	PSF
C.	METAL DECK	2	PSF
D.	FRAMING LOAD	3	PSF
E.	CEILING	2	PSF
F.	SPRINKLERS	2	PSF
G.	DUCTS, LIGHTS, MISCELLANEOUS MECHANICAL	4	PSF
H.	FUTURE SOLAR PANEL LOADING	5	PSF
	TOTAL LOAD	40	PSF MIN.

(*GROUND SNOW Pg = 10 PSF MODIFIED BY APPLICABLE DRIFT COEFFICIENTS. SNOW LOAD IMPORTANCE FACTOR I = 1.0. SNOW EXPOSURE FACTOR C_e = 1.0. SNOW LOAD THERMAL FACTOR C_t = 1.0 FOR ENCLOSED MAIN BUILDING, C_t = 1.1 FOR CANOPIES AND POP-UP ENTRY AREAS. FLAT ROOF SNOW LOAD P_f = 7 PSF. SECONDARY ROOF DRAINAGE VIA SCUPPERS OR OVERFLOW DRAINS SHALL BE PROVIDED IN ACCORDANCE WITH ASCE 7. SECONDARY ROOF DRAINAGE SHALL BE DESIGNED BY OTHERS TO LIMIT THE DEPTH OF WATER TO 4" MAXIMUM ABOVE THE ROOF MEMBRANE AT THE PRIMARY ROOF DRAIN.)

(** ROOF LIVE LOAD REDUCTION USED WHERE APPLICABLE)

2. MEZZANINE FLOOR LOAD:

A.	LIVE LOAD	80	PSF
B.	SLAB AND DECK	37	PSF
C.	FRAMING LOAD	5	PSF
D.	CEILING	2	PSF
E.	SPRINKLERS	2	PSF
F.	DUCTS, LIGHTS, MISC. MECHANICAL	4	PSF
	TOTAL LOAD	130	PSF MIN

3. WIND LOAD (PER ASCE 7):

A.	BASIC WIND SPEED	= 115 MPH
B.	RISK CATEGORY	= II
C.	WIND EXPOSURE	= B (ALL WIND DIRECTIONS)
D.	INTERNAL PRESSURE COEFFICIENT, GCpi	= +0.18, -0.18

E. DESIGN PRESSURES FOR EXTERIOR COMPONENT AND CLADDING ITEMS NOT DESIGNED BY THE ENGINEER OF RECORD: SPECIALTY ENGINEER SHALL DETERMINE WIND LOADS UNDER GOVERNING BUILDING CODE, AND BASED ON WIND LOAD PARAMETERS DEFINED ABOVE.

4. SEISMIC LOAD:

A.	SEISMIC IMPORTANCE FACTOR, I_E	= 1.0
B.	MAPPED SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS, S_S	= 0.099
C.	MAPPED SPECTRAL RESPONSE ACCELERATION AT 1 SEC. PERIOD, S_1	= 0.049
D.	RISK CATEGORY	= II
E.	SPECTRAL RESPONSE COEFFICIENT S_{DS}	= 0.105
F.	SPECTRAL RESPONSE COEFFICIENT S_{D1}	= 0.078
G.	SITE CLASS	= D
H.	BASIC STRUCTURAL SYSTEM	= BEARING WALL SYSTEM
I.	SEISMIC-FORCE-RESISTING SYSTEM	= INTERMEDIATE REINFORCED MASONRY SHEAR WALLS
J.	SEISMIC DESIGN CATEGORY	= B
K.	RESPONSE MODIFICATION FACTOR, R	= 3.5
L.	SEISMIC RESPONSE COEFFICIENT, C_S	= 0.03
M.	DESIGN BASE SHEAR	= 151 KIPS (MAX)
N.	ANALYSIS PROCEDURE	= ELFP

5. SPECIAL LOADS:
   - A. INTERIOR WALLS AND PARTITIONS THAT EXCEED 8 FEET IN HEIGHT: 5 PSF HORIZONTAL LOAD.
   - B. STAIR LIVE LOAD: 100 PSF
   - C. HANDRAILS AND GUARDRAILS:
     1. HANDRAIL AND GUARDRAIL TOP RAIL: 200 POUNDS CONCENTRATED LOAD AT ANY POINT IN ANY DIRECTION OR 50 PLF UNIFORM LOAD APPLIED IN ANY DIRECTION.
     2. INTERMEDIATE RAILS, BALUSTERS, AND PANEL FILLERS: HORIZONTALLY APPLIED NORMAL LOAD OF 50 POUNDS ON AN AREA NOT TO EXCEED 1 SQUARE FT., INCLUDING OPENINGS AND SPACE BETWEEN RAILS.

CONSTRUCTION AND SAFETY

1. CONTRACTOR SHALL BRACE ENTIRE STRUCTURE AS REQUIRED TO MAINTAIN STABILITY UNTIL COMPLETE AND FUNCTIONING AS THE DESIGNED UNIT.
2. ENGINEER SHALL NOT BE RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES OF CONSTRUCTION SELECTED BY CONTRACTOR.
3. THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND IS NOT LIMITED TO NORMAL WORKING HOURS. WHEN ON SITE, THE ENGINEER IS RESPONSIBLE FOR HIS/HER OWN SAFETY BUT HAS NO RESPONSIBILITY FOR THE SAFETY OF OTHER PERSONNEL OR SAFETY CONDITIONS AT THE SITE.
4. PRIOR TO COMMENCEMENT OF STEEL ERECTION, CONTRACTOR MUST PROVIDE THE STEEL ERECTOR WRITTEN NOTIFICATION THAT THE CONCRETE IN THE FOUNDATIONS, PIERS AND WALLS OR THE MORTAR IN THE MASONRY PIERS AND WALLS HAS ATTAINED EITHER 75 PERCENT OF THE INTENDED MINIMUM COMPRESSIVE DESIGN STRENGTH OR SUFFICIENT STRENGTH TO SUPPORT THE LOADS IMPOSED DURING STEEL ERECTION.
5. ANCHOR RODS/BOLTS AND FOUNDATION DOWELS SHALL NOT BE REPAIRED, REPLACED OR FIELD-MODIFIED WITHOUT THE WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD.

LATERAL LOAD RESISTING SYSTEM

1. THE LATERAL LOAD RESISTING SYSTEM CONSISTS OF THE FOLLOWING ELEMENTS:
   - A. METAL ROOF DECK DIAPHRAGM THROUGHOUT
   - B. MASONRY SHEAR WALLS AT THE PERIMETER.

ADJACENT RETAIL

1. AN ALLOWANCE FOR ADJACENT RETAIL ON THE EAST SIDE OF THE BUILDING HAS BEEN MADE. SEE DRAWINGS FOR ASSUMED RETAIL EXTENTS AND ASSUMED LOADING CONDITION AT ZERO LOT LINE FOUNDATION WALL.

FOUNDATIONS

1. FOUNDATION DESIGN IS BASED ON RECOMMENDATIONS DESCRIBED IN THE GEOTECHNICAL ENGINEER'S REPORT BY ENGINEERING & TESTING SERVICES, DATED MARCH 3, 2015. THE GEOTECHNICAL ENGINEER'S REPORT IS AVAILABLE UPON REQUEST.
   - A. ALL FOUNDATIONS SHALL BEAR ON LEVEL (WITHIN 1 IN 12) UNDISTURBED SOIL OR APPROVED ENGINEERED FILL. FOUNDATIONS HAVE BEEN DESIGNED FOR A MAXIMUM SOIL BEARING PRESSURE OF 2500 PSF BELOW STRIP FOOTINGS AND 2500 PSF BELOW ISOLATED COLUMN FOOTINGS.
   - B. ALL EXTERIOR FOUNDATIONS SHALL EXTEND A MINIMUM OF 2'-0" BELOW FINISH GRADE FOR FROST PROTECTION.
   - C. FOUNDATION ELEVATIONS SHOWN ARE FOR BIDDING PURPOSES AND MAY VARY TO SUIT SUB-SURFACE SOIL CONDITION. ELEVATION AND BEARING STRATA SHALL BE APPROVED BY A GEOTECHNICAL ENGINEER PRIOR TO PLACING CONCRETE. PROVIDE ENGINEERED FILL OR LEAN CONCRETE (500 PSI) UNDER FOUNDATIONS AT SOFT SPOTS AND FOR EXTENDING EXCAVATION TO ADEQUATE BEARING MATERIAL. INSTALL FOUNDATIONS AT DESIGNED ELEVATIONS.
2. LATERAL SOIL PRESSURE USED FOR DESIGN OF RETAINING WALLS: 45 PCF EQUIVALENT FLUID PRESSURE, TRIANGULAR DISTRIBUTION.
3. FILL AND BACK FILL:
   - A. ALL FILL MATERIALS SHALL BE APPROVED BY A GEOTECHNICAL CONSULTANT. FILL SHALL BE BROUGHT TO A MOISTURE CONTENT WITHIN TWO PERCENTAGE POINTS OF THE OPTIMUM MOISTURE VALUE AND COMPACTED TO AT LEAST 95% OF MAXIMUM DRY DENSITY.
   - B. BACKFILL AGAINST SHALLOW WALL FOUNDATIONS:
     1. BACKFILL AGAINST EXTERIOR FACE OF SHALLOW WALL FOUNDATIONS SHALL BE CLAYEY MATERIAL COMPACTED TO 95% STANDARD PROCTOR DENSITY.
     2. BACKFILL AGAINST INTERIOR FACE OF SHALLOW WALL FOUNDATIONS SHALL BE CLAYEY MATERIAL COMPACTED IN 6" LIFTS TO 95% STANDARD PROCTOR DENSITY OR CONCRETE WITH A COMPRESSIVE STRENGTH OF f'c = 500 PSI.
   - C. BACKFILL AGAINST RETAINING WALL FOUNDATIONS:
     1. BACKFILL AGAINST HIGH GRADE FACE OF RETAINING TYPE WALLS SHALL BE WELL GRADED GRANULAR MATERIAL COMPACTED TO 95% STANDARD PROCTOR DENSITY. AT THE BOTTOM OF THE GRANULAR MATERIAL, PLACE A 4" DIAMETER PERFORATED FOUNDATION DRAIN PIPE WITH POSITIVE DRAINAGE TO TIE-IN SHOWN ON CIVIL DRAWINGS.
     2. BACKFILL AGAINST LOW GRADE FACE OF RETAINING TYPE WALLS SHALL BE CLAYEY MATERIAL COMPACTED TO 95% STANDARD PROCTOR DENSITY.
   - D. FILL BELOW FLOOR SLABS:
     1. PROVIDE 6" OF COMPACTED GRANULAR MATERIAL BELOW FLOOR SLAB.
     2. CONTRACTOR SHALL PREPARE THE SUBGRADE ACCORDING TO THE GEOTECHNICAL REPORT.
   - E. FILL AT UTILITY TRENCHES BELOW FOOTINGS, EXCAVATED PRIOR TO FOOTING CONSTRUCTION:
     1. BACKFILL TRENCHES UNDER FOOTINGS AND WITHIN 18 INCHES OF BOTTOM OF FOOTINGS WITH LEAN CONCRETE TO THE BOTTOM OF FOOTING ELEVATION.
     2. BACKFILL TRENCHES EXCAVATED UNDER FOOTINGS AND MORE THAN 18 INCHES BELOW BOTTOM OF FOOTINGS WITH FILL MATERIAL APPROVED BY GEOTECHNICAL ENGINEER.
   - F. FILL AT UTILITY TRENCHES BELOW FOOTINGS, EXCAVATED AFTER FOOTING CONSTRUCTION:
     1. BACKFILL TRENCHES EXCAVATED UNDER EXISTING FOOTINGS WITH LEAN CONCRETE TO THE BOTTOM OF FOOTING ELEVATION.
4. CONTRACTOR SHALL CONTACT UTILITY COMPANIES FOR LOCATING UNDERGROUND SERVICES AND IS RESPONSIBLE FOR THEIR PROTECTION AND SUPPORT.
5. ALL AREAS WITHIN THE FOOTPRINT OF THE BUILDING, INCLUDING UTILITY TRENCHES, MUST BE FREE OF ANY WET AND/OR SOFT AREAS PRIOR TO PLACEMENT OF FILL MATERIAL OR SLAB.
6. SEAL UTILITY TRENCH AT THE EXTERIOR FOUNDATION WALL BY USING A COMPACTED CLAYEY BACKFILL OR LEAN CONCRETE TO CREATE A DAM TO PREVENT ENTRY OF WATER.
7. FINISHED GRADE SHALL SLOPE AWAY FROM THE PERIMETER FOUNDATION.
8. UTILITY TRENCHES PARALLEL TO FOOTINGS AND WITH PIPES BELOW THE BOTTOM OF FOOTING ELEVATION MUST BE LOCATED SO THAT THE SLOPE BETWEEN THE PIPE INVERT ELEVATION AND THE BOTTOM CORNER OF THE FOOTING IS A MINIMUM OF 2 HORIZONTAL TO 1 VERTICAL.
9. FOOTINGS MAY BE PLACED WITHOUT SIDE FORMS IF EXCAVATED WALLS STAND APPROXIMATELY VERTICAL.

CONCRETE

1. CONCRETE WORK AND TESTING, AS PERFORMED BY "QUALIFIED FIELD TESTING TECHNICIANS" AND "QUALIFIED LABORATORY TECHNICIANS", SHALL CONFORM TO ALL REQUIREMENTS OF ACI 301, "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS", EXCEPT AS MODIFIED BY THE SUPPLEMENTAL REQUIREMENTS BELOW. REPORTS FROM TESTS REQUIRED BY SECTION 1.6 OF ACI 301 SHALL BE SUBMITTED TO STRUCTURAL ENGINEER, ARCHITECT, OWNER, CONTRACTOR, CONCRETE SUPPLIER, AND BUILDING OFFICIAL.
2. CONCRETE WORK IN COLD WEATHER SHALL CONFORM TO ALL REQUIREMENTS OF ACI 306.1 "STANDARD SPECIFICATION FOR COLD WEATHER CONCRETING" AND ACI 306R "GUIDE TO COLD WEATHER CONCRETING".
3. CONCRETE WORK IN HOT WEATHER SHALL CONFORM TO ALL REQUIREMENTS OF ACI 305.1-06 "SPECIFICATION FOR HOT WEATHER CONCRETING" AND ACI 305R "GUIDE TO HOT WEATHER CONCRETING". THE AIR TEMPERATURE, RELATIVE HUMIDITY, CONCRETE TEMPERATURE, AND WIND SPEED SHALL BE ENTERED INTO NOMOGRAPH FIGURE 4.2 IN ACI 305R TO DETERMINE IF PRECAUTIONS AGAINST PLASTIC SHRINKAGE ARE REQUIRED.
4. CONCRETE MIX DESIGNS SHALL BE SUBMITTED FOR EACH TYPE OF CONCRETE TO THE STRUCTURAL ENGINEER FOR APPROVAL IN ACCORDANCE WITH ACI 301 SECTION 4.2.3.4 FIELD TEST DATA OR TRIAL MIXTURES. SUBMITTAL DATA MUST INCLUDE FIELD TEST DATA FROM AT LEAST 10 TESTS OR A THREE-POINT CURVE GENERATED USING TRIAL MIXTURES.
5. SUBMIT SHOP DRAWINGS FOR REINFORCING STEEL.
6. MATERIALS: (f'c BASED ON 28 DAYS UNLESS NOTED)
   - A. CONCRETE UNLESS NOTED: f'c = 4000 PSI NORMAL WEIGHT AGGREGATE.
   - B. CONCRETE FOR INTERIOR FLOOR SLABS-ON-GROUND: f'c = 3500 PSI AT 28 DAYS, 1800 PSI AT 3 DAYS, NORMAL WEIGHT AGGREGATE, MINIMUM CEMENTITIOUS-MATERIALS CONTENT PER ACI 301 TABLE 4.2.2.1, PLASTICIZING OR WATER REDUCING ADMIXTURE REQUIRED. MAXIMUM WATER/CEMENTITIOUS RATIO = 0.50. PROVIDE CELLULOSE FIBER REINFORCING PER KROGER MASTER SPECIFICATION. MINIMUM CEMENTITIOUS-MATERIALS CONTENT REQUIREMENT PER TABLE 4.2.2.1 MAY BE WAIVED IF A HISTORY OF FINISHING QUALITY, APPEARANCE, DURABILITY, AND SURFACE HARDNESS IS SUBMITTED OR IF A TEST SLAB OF AT LEAST 8 FEET X 8 FEET IS PLACED AT THE JOB SITE USING JOB MATERIALS, EQUIPMENT, AND PERSONNEL AND EVALUATION RESULTS SUBMITTED. NO FLYASH ALLOWED.
   - C. CONCRETE FOR INTERIOR FLOOR SLABS ON METAL DECK: f'c = 3500 PSI AT 28 DAYS, 1800 PSI AT 3 DAYS, NORMAL WEIGHT AGGREGATE, MINIMUM CEMENTITIOUS-MATERIALS CONTENT PER ACI 301 TABLE 4.2.2.1, PLASTICIZING OR WATER REDUCING ADMIXTURE REQUIRED. MAXIMUM WATER/CEMENTITIOUS RATIO = 0.50. MINIMUM CEMENTITIOUS-MATERIALS CONTENT REQUIREMENT PER TABLE 4.2.2.1 MAY BE WAIVED IF A HISTORY OF FINISHING QUALITY, APPEARANCE, DURABILITY, AND SURFACE HARDNESS IS SUBMITTED OR IF A TEST SLAB OF AT LEAST 8 FEET X 8 FEET IS PLACED AT THE JOB SITE USING JOB MATERIALS, EQUIPMENT, AND PERSONNEL AND EVALUATION RESULTS SUBMITTED.
   - D. CONCRETE FOR GRADE BEAMS, FOUNDATION WALLS, AND RETAINING WALLS WITH EXTERIOR EXPOSURE: f'c = 4500 PSI, (4.5% TO 7.5% ENTRAINED AIR). MAXIMUM WATER/CEMENTITIOUS RATIO = 0.45.
   - E. CONCRETE FOR FOOTINGS: f'c = 3000 PSI, MAX WATER/CEMENTITIOUS RATIO = 0.55.
   - F. CONCRETE FOR STAIR PAN FILL: f'c = 3000 PSI., 3/8" MAXIMUM AGGREGATE SIZE.
   - G. REINFORCING STEEL:
     1. DEFORMED BARS: ASTM A615, ASTM A706, OR ASTM A996, 60 KSI YIELD.
     2. WELDED WIRE REINFORCEMENT: ASTM A1064. FLAT SHEETS ONLY.
   - H. FLY ASH: ASTM C618, TYPE F OR C. WHEN USED, FLY ASH-TO-TOTAL CEMENTITIOUS RATIO SHALL BE 15% MINIMUM. WHEN USED IN INTERIOR SLABS ON METAL DECK, FLY ASH-TO-TOTAL CEMENTITIOUS RATIO SHALL BE 25% MAXIMUM.
   - I. GROUND GRANULATED BLAST FURNACE SLAG: ASTM C989. TOTAL GROUND GRANULATED BLAST FURNACE SLAG-TO-TOTAL CEMENTITIOUS RATIO SHALL NOT EXCEED 30% MAXIMUM.
   - J. FLY ASH, NATURAL POZZOLANS, SILICA FUME, OR GROUND GRANULATED BLAST FURNACE SLAG: WHEN EXPOSED TO DEICING CHEMICALS, LIMIT THE MAXIMUM WEIGHT TO THE PERCENTAGES OF THE TOTAL WEIGHT OF CEMENTITIOUS MATERIALS GIVEN IN TABLE 4.2.2.7.b.2 OF ACI 301.
   - K. PLASTICIZING ADMIXTURE: ASTM C1017.
   - L. WATER REDUCING ADMIXTURE: ASTM C494.
   - M. CHLORIDE CONTENT OF CONCRETE: LIMIT TOTAL CHLORIDE ION CONTENT TO AMOUNT INDICATED IN TABLE 4.2.2.7.d OF ACI 301 (EXPOSURE CLASS C0 UNLESS NOTED OTHERWISE). ADMIXTURES CONTAINING CHLORIDE ARE NOT PERMITTED IN REINFORCED CONCRETE OR CONCRETE CONTAINING METALS.
7. IF CONCRETE ARRIVES AT THE POINT OF DELIVERY WITH A SLUMP BELOW THAT WHICH WILL RESULT IN THE SPECIFIED SLUMP AT THE POINT OF PLACEMENT AND IS UNSUITABLE FOR PLACING AT THAT SLUMP, THE SLUMP MAY BE ADJUSTED ONCE ONLY TO THE REQUIRED VALUE BY ADDING WATER UP TO THE AMOUNT ALLOWED IN THE ACCEPTED MIXTURE PROPORTIONS. ADDITION OF WATER SHALL BE IN ACCORDANCE WITH ASTM C94. DO NOT EXCEED THE SPECIFIED WATER-CEMENTITIOUS MATERIAL RATIO OR SLUMP IN THE APPROVED MIX DESIGN. DO NOT ADD WATER TO CONCRETE DELIVERED IN EQUIPMENT NOT ACCEPTABLE FOR MIXING. AFTER PLASTICIZING OR WATER REDUCING ADMIXTURES ARE ADDED TO THE CONCRETE AT THE SITE TO ACHIEVE FLOWABLE CONCRETE, DO NOT ADD WATER TO THE CONCRETE. MEASURE SLUMP (AND AIR CONTENT OF AIR ENTRAINED CONCRETE) AFTER SLUMP ADJUSTMENT, TO VERIFY COMPLIANCE WITH SPECIFIED REQUIREMENTS.
8. SLUMP SHALL BE MEASURED PRIOR TO THE ADDITION OF ADMIXTURES AND AFTER THE ADDITION OF ADMIXTURES.
9. REINFORCING BARS SHALL HAVE CLEAR COVER AS INDICATED ON THE DRAWINGS. WHERE NOT INDICATED, PROVIDE MINIMUM CLEAR COVER PER ACI-318.
10. LAP SPLICE REINFORCING BARS AS FOLLOWS UNLESS NOTED OTHERWISE:
    - A. HORIZONTAL BARS #6 AND SMALLER WITH MORE THAN 12" OF CONCRETE BELOW - 64 BAR DIAMETERS
    - B. HORIZONTAL BARS #6 AND SMALLER WITH LESS THAN 12" OF CONCRETE BELOW, AND ALL OTHER BARS - 50 BAR DIAMETERS
    - C. HORIZONTAL BARS #7 AND LARGER WITH MORE THAN 12" OF CONCRETE BELOW - 80 BAR DIAMETERS
    - D. HORIZONTAL BARS #7 AND LARGER WITH LESS THAN 12" OF CONCRETE BELOW, AND ALL OTHER BARS - 62 BAR DIAMETERS
11. REINFORCING BARS SHALL BE FREE OF DIRT AND FORM RELEASE AGENTS.
12. AT CORNERS AND INTERSECTIONS OF FOOTINGS, WALLS AND GRADE BEAMS, PROVIDE BENT BARS OF EQUAL SIZE AND AT SAME SPACING AS TYPICAL REINFORCING AROUND CORNER AND/OR INTO ABUTTING FOOTING, WALL OR GRADE BEAM.
13. THE ELEVATED CONCRETE SLAB ON METAL DECK SHALL BE PLACED IN A MANNER TO ACHIEVE A UNIFORM SLAB THICKNESS. THE STEEL FLOOR FRAMING HAS NOT BEEN DESIGNED TO SUPPORT THE WEIGHT OF ANY ADDITIONAL CONCRETE DUE TO JOIST AND GIRDER DEFLECTION.
14. MACHINE TROWEL FINISH FLOOR SLAB AND CURE USING "CURE AND SEAL" TYPE CURING COMPOUND MEETING ASTM C1315. VOC COMPLIANT, 25% MINIMUM SOLIDS CONTENT. FOR APPLICATIONS EXPOSED TO SUNLIGHT USE LIGHT BROOM FINISH AND ACRYLIC BASED CURING COMPOUND.
15. FLOOR SLAB-ON-GRADE SHALL CONFORM TO SURFACE PROFILE TOLERANCES PER ASTM E-1155, ACI 117 AND AS SPECIFIED IN THE KROGER SPECIFICATIONS.
16. SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR VAPOR BARRIER REQUIREMENTS. VAPOR BARRIER, WHERE REQUIRED, SHALL BE PLACED OVER COMPACTED GRANULAR SUBBASE.
17. AT SLAB AND WALL OPENING CORNERS AND REENTRANT CORNERS, PROVIDE (1) #5 BAR IN EACH FACE PARALLEL TO EACH EDGE EXTENDING A MINIMUM OF 2'-0" PAST EDGE OF OPENING. THIS STEEL MAY BE OMITTED IF TYPICAL WALL STEEL EXCEEDS THIS MINIMUM REQUIREMENT.
18. LAP WELDED WIRE REINFORCEMENT MINIMUM 1 FULL SPACE PLUS 2".
19. DO NOT BACKFILL AGAINST RETAINING WALLS UNTIL CONCRETE STRENGTH HAS REACHED 0.75 f'c AND A MINIMUM OF 7 DAYS.
20. FINISH OF CONCRETE ACCESSIBLE RAMPS TO CONFORM TO THE REQUIREMENTS OF THE INTERNATIONAL CODE COUNCIL (ICC/ANSI A117.1).
21. CONTRACTION JOINTS IN SLABS ON GROUND SHALL CREATE SECTIONS OF SLAB WITH A MAXIMUM ASPECT RATIO OF 1.5:1. SEE DRAWINGS FOR TYPICAL DETAILS AND MAXIMUM SPACING.
22. CONSTRUCTION JOINTS IN SLABS ON GROUND MAY BE LOCATED AT ANY CONTRACTION JOINT LOCATION. SEE DRAWINGS FOR TYPICAL DETAILS.
23. PROVIDE 3/4" CHAMFER AT CORNERS OF EXPOSED CONCRETE.
24. WHERE BRITTLE FLOOR FINISHES ARE TO BE APPLIED TO FLOOR SLABS, COORDINATE CONTRACTION JOINT LOCATIONS WITH FLOOR FINISH JOINT LOCATIONS AND ARCHITECT.
25. PROVIDE CONTRACTION/CONSTRUCTION JOINTS IN CONCRETE WALLS AT A MAXIMUM SPACING OF TWICE THE HEIGHT OF THE WALL ABOVE THE TOP OF FOOTING. MAXIMUM JOINT SPACING SHALL NOT EXCEED 24 FT. CONTRACTION JOINTS SHALL HAVE A 1-1/2" DEEP BY 3/4" WIDE TAPERED REVEAL EACH SIDE OF THE WALL. AT CONTRACTION JOINTS, EVERY OTHER HORIZONTAL BAR SHALL BE CUT BACK 1-1/2" FROM THE CONTRACTION JOINT. CONSTRUCTION JOINTS SHALL BE FORMED SIMILAR TO CONTRACTION JOINTS. AT CONSTRUCTION JOINTS, ALL HORIZONTAL STEEL SHALL BE DISCONTINUOUS AND A DOWEL BAR OF SIZE AND SPACING TO MATCH THE HORIZONTAL REINFORCING SHALL BE EMBEDDED A MINIMUM OF 40 BAR DIAMETERS EACH SIDE OF THE CONSTRUCTION JOINT. SEE ARCHITECTURAL DRAWINGS FOR ARCHITECTURAL JOINT TREATMENT.
26. CONDUITS AND PIPES OF ALUMINUM SHALL NOT BE EMBEDDED IN STRUCTURAL CONCRETE UNLESS EFFECTIVELY COATED TO PREVENT ALUMINUM-CONCRETE REACTION OR ELECTROLYTIC ACTION BETWEEN ALUMINUM AND STEEL.

MECHANICAL FASTENERS

1. EXPANSION ANCHORS SHALL BE MANUFACTURED BY HILTI AND SHALL BE THE SIZE AND EMBEDMENT INDICATED ON DRAWINGS. EXPANSION ANCHORS SHALL BE KWIK BOLT 3 WHEN EMBEDDED INTO CONCRETE OR SOLID GROUTED MASONRY UNLESS OTHERWISE NOTED. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. SUBSTITUTES MAY BE CONSIDERED; SUBMIT MANUFACTURER'S DATA PRIOR TO INSTALLATION.
2. POWDER DRIVEN FASTENER SHALL BE MANUFACTURED BY HILTI AND INSTALLED AT THE SPACING SHOWN ON THE DRAWINGS. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. SUBSTITUTES MAY BE CONSIDERED: SUBMIT MANUFACTURER'S DATA PRIOR TO INSTALLATION. PROVIDE FASTENERS FOR STEEL AND CONCRETE SUBSTRATES AS FOLLOWS:
   - A. FOR FASTENING LIGHT GAGE METAL FRAMING TO STEEL: TYPE X-U NAIL, 0.157" DIAMETER, QUALIFIED PER ICC-ES ESR-2269. FASTENER LENGTH SHALL BE AS REQUIRED FOR MINIMUM SHANK PENETRATION THROUGH STEEL.
   - B. FOR FASTENING LIGHT GAGE METAL FRAMING TO CONCRETE OR MASONRY: TYPE X-U NAIL, 0.157" DIAMETER, 1 ¼" MINIMUM EMBEDMENT, QUALIFIED PER ICC-ES ESR-2269.

ADHESIVE ANCHORS

1. ANCHORAGE TO CONCRETE: HILTI "HIT RE 500-V3" EPOXY. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. SUBSTITUTES MAY BE CONSIDERED: SUBMIT MANUFACTURER'S DATA PRIOR TO INSTALLATION.
   - A. HOLES MAY BE DIAMOND CORED OR DRILLED WITH CONVENTIONAL HAMMER DRILL. HOLES SHALL BE BRUSHED AND BLOWN FREE OF ALL DELETERIOUS MATERIAL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS BEFORE INSTALLATION OF ADHESIVE.
   - B. STEEL THREADED ROD ANCHORS SHALL BE HILTI "HAS-E" STANDARD RODS. SIZE AND EMBEDMENT SHALL BE AS INDICATED ON DRAWINGS.
2. ANCHORAGE TO SOLID GROUTED CONCRETE MASONRY UNITS: HILTI "HIT HY 70". SUBSTITUTES MAY BE CONSIDERED; SUBMIT MANUFACTURER'S DATA PRIOR TO INSTALLATION.
   - A. DRILL HOLES WITH A CARBIDE TIPPED DRILL BIT AND CONVENTIONAL HAMMER DRILL. CORE DRILLING IS NOT ACCEPTABLE. HOLES TO BE BRUSHED AND BLOWN FREE OF ALL DELETERIOUS MATERIAL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS BEFORE INSTALLATION OF ADHESIVE.
   - B. STEEL THREADED ROD ANCHORS SHALL BE HILTI "HAS-E" RODS. SIZE AND EMBEDMENT SHALL BE AS INDICATED ON DRAWINGS.
   - C. FOR TEMPERATURES BETWEEN 40° F AND -10° F, USE HILTI HIT-ICE ADHESIVE ANCHORS.
3. CONTRACTOR SHALL VERIFY THAT THE SHELF LIFE OF THE ADHESIVE HAS NOT BEEN EXCEEDED ON THE DATE OF INSTALLATION.

MASONRY

1. MASONRY CONSTRUCTION AND MATERIALS SHALL CONFORM TO ALL REQUIREMENTS OF "SPECIFICATIONS FOR MASONRY STRUCTURES" (ACI 530.1/ASCE 6/TMS 602), EXCEPT AS MODIFIED BY THE REQUIREMENTS OF THESE CONTRACT DOCUMENTS.
2. COMPRESSIVE STRENGTH SHALL BE DETERMINED FOR EACH TYPE OF MASONRY BY THE UNIT STRENGTH METHOD.
   - A. CONCRETE MASONRY: f'_m = 2000 PSI AT 28 DAYS.
3. SUBMITTALS SHALL BE MADE FOR THE FOLLOWING:
   - A. COLD WEATHER CONSTRUCTION PROCEDURE.
   - B. HOT WEATHER CONSTRUCTION PROCEDURE.
   - C. MANUFACTURERS LITERATURE FOR:
     1. HORIZONTAL JOINT REINFORCING.
     2. REINFORCING STEEL POSITIONERS.
     3. MOVEMENT JOINT MATERIALS.
     4. TIES & ANCHORS.
   - D. SHOP DRAWINGS SHOWING:
     1. DETAILS OF STEEL REINFORCING.
     2. LINTELS.
   - E. MANUFACTURERS CERTIFICATE OF COMPLIANCE FOR SPECIFIED:
     1. MASONRY UNITS.
     2. REINFORCING STEEL.
   - F. PROPORTIONS OF MATERIALS IN ACCORDANCE WITH REFERENCED SPECIFICATIONS OF:
     1. MORTAR.
     2. GROUT.
4. MATERIALS:
   - A. CONCRETE MASONRY UNITS: ASTM C90 TYPE I.
     1. BELOW GRADE: NORMAL WEIGHT AGGREGATE PER ASTM C33.
     2. ABOVE GRADE: LIGHTWEIGHT AGGREGATE PER ASTM C331 OR NORMAL WEIGHT.
   - B. FACING BRICK: ASTM C216 GRADE SW. COLOR AND SIZE AS NOTED ON THE ARCHITECTURAL DRAWINGS.
   - C. MORTAR: ASTM C270
     1. MORTAR TYPES
        - A. ALL MASONRY UNLESS NOTED OTHERWISE: TYPE S
     2. PORTLAND CEMENT-LIME MORTAR:
        - A. PORTLAND CEMENT: TYPE I.
        - B. HYDRATED LIME: TYPE S.
     3. MASONRY CEMENT MORTAR IS PERMITTED.
   - D. GROUT: ASTM C476. SLUMP 8" TO 11". MINIMUM COMPRESSIVE STRENGTH = 2000 PSI AT 28 DAYS. 3/8" MAX AGGREGATE SIZE.
   - E. REINFORCING STEEL: ASTM A615, ASTM A706, OR ASTM A996, 60 KSI YIELD.
   - F. HORIZONTAL JOINT REINFORCING FOR SINGLE WYTHE CONCRETE MASONRY: ASTM A951 9 GAGE LADDER TYPE. HOT DIPPED GALVANIZED PER ASTM A153 CLASS B. PLACE HORIZONTAL JOINT REINFORCING AT 16" CENTERS VERTICALLY FOR CONCRETE MASONRY. LAP HORIZONTAL JOINT REINFORCING 6" MINIMUM. HORIZONTAL JOINT REINFORCING SHALL BE DISCONTINUOUS ACROSS MOVEMENT JOINTS.
   - G. HORIZONTAL JOINT REINFORCING FOR CONCRETE MASONRY AND BRICK VENEER CAVITY WALL: ASTM A951 9 GAGE LADDER TYPE PLACED IN CONCRETE MASONRY WITH PROJECTING EYES FOR 3/16" DIAMETER DOUBLE WIRE RECTANGULAR ADJUSTABLE PINTLE. HOT DIPPED GALVANIZED PER ASTM A153 CLASS B. PLACE HORIZONTAL JOINT REINFORCING AT 16" CENTERS VERTICALLY FOR CONCRETE MASONRY. LAP HORIZONTAL JOINT REINFORCING 6" MINIMUM. HORIZONTAL JOINT REINFORCING SHALL BE DISCONTINUOUS ACROSS MOVEMENT JOINTS.
   - H. BRICK VENEER ANCHORS FOR METAL STUD BACKUP: HOHMANN & BARNARD HB-213 OR WIRE-BOND RJ-711 WITH 3/16" DIAMETER PINTLE. HOT-DIPPED GALVANIZED PER ASTM A153 CLASS B. VERTICAL DISTANCE BETWEEN HORIZONTAL PINTLE WIRE AND CLIP PLATE SHALL NOT EXCEED 1 1/4 INCH. (FLAT CORRUGATED TIES ARE NOT PERMITTED.) PROVIDE BRICK VENEER ANCHORS WITH MAXIMUM HORIZONTAL SPACING OF 24" AND MAXIMUM VERTICAL SPACING OF 16". BRICK VENEER ANCHORS SHALL BE EMBEDDED 2" MINIMUM INTO BRICK.
     1. SCREWS FOR METAL STUD ANCHORAGE SHALL BE HEX HEAD SELF-DRILLING SELF TAPPING WITH MILD SHANK AND HARDENED TIP WITH ORGANIC-POLYMER COATING AND NEOPRENE OR EPDM WASHER. MINIMUM #10 SIZE. ACCEPTABLE PRODUCTS ARE ELCO DRIL-FLEX WITH STALGARD FINISH AND ITW BUILDEX TEKS SELECT WITH CLIMASEAL FINISH. (STAINLESS STEEL AND COPPER-COATED SCREWS ARE NOT PERMITTED.) SUBSTITUTES COMPLYING WITH AC118 MAY BE CONSIDERED.
   - I. HORIZONTAL JOINT REINFORCING FOR CONCRETE MASONRY VENEER: ASTM A951 9 GAGE WIRE HOT DIPPED GALVANIZED PER ASTM A153 CLASS B. PLACE HORIZONTAL JOINT REINFORCING AT 16" CENTERS VERTICALLY FOR VENEER. ALTERNATE BED JOINTS FOR HORIZONTAL JOINT REINFORCING AND VENEER ANCHORS. LAP HORIZONTAL JOINT REINFORCING 6" MINIMUM. HORIZONTAL JOINT REINFORCING SHALL BE DISCONTINUOUS ACROSS MOVEMENT JOINTS.
5. QUALITY ASSURANCE
   - A. SITE STRUCTURAL OBSERVATION (NOT CONSIDERED PART OF SPECIAL INSPECTIONS) OF MASONRY WORK IS REQUIRED PER ACI 530.1-11/ASCE 6-11/TMS 602-11. SITE OBSERVATIONS WILL BE MADE BY THE STRUCTURAL ENGINEER, ARCHITECT, OR AN ALTERNATE APPROVED BY THE STRUCTURAL ENGINEER. COST OF THIS SERVICE WILL BE PAID FOR BY OWNER. REQUEST FOR OBSERVATION IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THE SITE OBSERVER SHALL VERIFY COMPLIANCE WITH THE DESIGN DRAWINGS AND SPECIFICATIONS AND KEEP A RECORD WHICH WILL COVER:
     1. QUALITY OF MASONRY UNITS AND MATERIALS FOR MORTAR AND GROUT.
     2. PROPORTIONING, MIXING AND CONSISTENCY OF MORTAR AND GROUT.
     3. LAYING, MORTARING AND GROUTING OF MASONRY UNITS AND MASONRY STRUCTURAL ELEMENTS.
     4. CONDITIONS, GRADE, SIZE, SPACING AND PLACING OF REINFORCING.
     5. TYPE, SPACING, AND PLACING OF TIES AND ACCESSORIES.
     6. ANY SIGNIFICANT OR UNUSUAL CONSTRUCTION LOADS ON COMPLETED MASONRY STRUCTURAL ELEMENTS.
     7. TEMPERATURE, MOISTURE CONDITIONS, AND PROVISIONS THAT WERE MADE FOR HOT OR COLD WEATHER CONSTRUCTION.
     8. GENERAL PROGRESS OF WORK.
   - B. OBSERVATION RECORDS, IF DONE OTHER THAN BY STRUCTURAL ENGINEER, SHALL BE IMMEDIATELY FORWARDED TO STRUCTURAL ENGINEER AFTER EACH SITE VISIT.
6. MORTAR PROPORTIONS MUST BE ACCURATELY MEASURED PRIOR TO MIXING. ADD CEMENT TO MIX IN FULL BAG QUANTITIES. MEASURE SAND IN BOX WITH VOLUME OF ONE CUBIC FOOT AS OFTEN AS NECESSARY TO MAINTAIN CONSISTENT PROPORTIONS AND AT LEAST ONCE DAILY AND EVERY 4 HOURS OF MIXING.
7. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS AND SPECIFICATIONS OF FIRE RATED MASONRY.
8. PROVIDE PREFABRICATED "L" AND "T" SHAPED HORIZONTAL JOINT REINFORCING AT WALL INTERSECTIONS.
9. KEEP AIR SPACE BEHIND VENEER FREE OF MORTAR DROPPINGS.
10. RUNNING BOND PATTERN SHALL BE USED FOR ALL MASONRY WORK UNLESS OTHERWISE NOTED.
11. PROVIDE MOVEMENT (CONTROL AND EXPANSION) JOINTS IN WALLS WHERE INDICATED ON ARCHITECTURAL DRAWINGS. BOND BEAMS SHALL BE DISCONTINUOUS ACROSS MOVEMENT JOINTS UNLESS NOTED OTHERWISE:
    - A. MOVEMENT JOINTS IN CONCRETE BLOCK: SASH BLOCK UNIT WITH PREFORMED SHEAR KEY. CAULK BOTH FACES. ALTERNATE DETAILS FOR CONTROL JOINTS MAY BE ACCEPTABLE – SUBMIT DETAILS FOR APPROVAL.
    - B. MOVEMENT JOINTS IN BRICK: 3/8" WIDE CLEAN JOINT FILLED WITH EXPANSION JOINT MATERIAL PER ASTM D1056, CLASS RE 41. CAULK EXTERIOR FACE.
    - C. PROVIDE BUILDING PAPER BOND BREAK BELOW LINTEL BEARING ADJACENT TO CONTROL JOINTS.
12. ALL REINFORCING STEEL SHALL BE SUPPORTED AND FASTENED TO APPROVED POSITIONERS LOCATED AT 192 BAR DIAMETERS MAXIMUM SPACING AND WITH A MINIMUM OF TWO POSITIONERS PER GROUT POUR (ONE NEAR THE BOTTOM AND ONE NEAR THE TOP) TO PREVENT DISPLACEMENT DURING THE PLACEMENT OF GROUT. "WET-STICKING" OF REINFORCING IS NOT PERMITTED.
13. GROUT ALL CELLS BELOW GRADE SOLID.
14. PROVIDE REINFORCING BAR SPLICES AS SPECIFIED IN THE FOLLOWING TABLE. BAR SPLICE COUPLERS MAY BE CONSIDERED AS A SUBSTITUTE, SUBMIT MANUFACTURER'S DATA PRIOR TO INSTALLATION.

BAR SIZE	LAP SPLICE
#4	26"
#5	32"
#6	39"
#7	47"

STRUCTURAL STEEL

1. ALL DETAILING, FABRICATION, AND ERECTION SHALL CONFORM TO AISC SPECIFICATIONS FOR "DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", AND THE AISC "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES", LATEST EDITION.
2. STRUCTURAL STEEL FABRICATOR SHALL PARTICIPATE IN THE AISC QUALITY CERTIFICATION PROGRAM, AND SHALL BE DESIGNATED AN AISC-CERTIFIED PLANT.

   OR

   THE OWNER SHALL ENGAGE A QUALIFIED INDEPENDENT TESTING AND INSPECTING AGENCY TO VERIFY THAT THE FABRICATOR MAINTAINS DETAILED FABRICATION AND QUALITY CONTROL PROCEDURES ACCORDING TO IBC, CHAPTER 17. SPECIAL INSPECTION OF FABRICATORS FACILITY WILL NOT BE REQUIRED IF FABRICATOR PARTICIPATES IN THE AISC QUALITY CERTIFICATION PROGRAM AND IS DESIGNATED AN AISC-CERTIFIED PLANT, CATEGORY STD.
3. FABRICATOR SHALL DESIGN CONNECTIONS AND, WHEN REQUESTED, SUBMIT CALCULATIONS TO AID THE ENGINEER IN REVIEW. UNLESS SPECIFIC END MOMENTS AND REACTIONS ARE INDICATED ON DRAWINGS, DESIGN AND FABRICATE CONNECTIONS TO RESIST SHEAR BASED ON THE MAXIMUM UNIFORM LOAD CAPACITY OF THE MEMBER FOR THE SPAN INCREASED BY 15%, BUT NO MORE THAN THE SHEAR CAPACITY OF THE MEMBER. FABRICATOR SHALL TAKE INTO ACCOUNT ANY AXIAL LOADS NOTED ON THE PLANS.
4. IF SHOP WELDS OR COLUMN REACTIONS FOR COLUMN-TO-BASE PLATE CONNECTIONS ARE NOT INDICATED ON THE DRAWINGS, THE CONNECTION SHALL BE DESIGNED BY THE FABRICATOR FOR ERECTION FORCES REQUIRED BY OSHA.
5. FIELD CONNECTIONS SHALL BE BOLTED EXCEPT WHERE WELDED CONNECTIONS ARE INDICATED ON THE STRUCTURAL DRAWINGS.
6. WELDING SHALL BE IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY (AWS D1.1).
7. MATERIALS:
   - A. W-SHAPES UNLESS NOTED: ASTM A992, Fy = 50 KSI.
   - B. PLATES AND ROLLED SHAPES OTHER THAN W-SHAPES, UNLESS NOTED: ASTM A36.
   - C. TUBULAR SHAPES (HSS SQUARE AND RECTANGULAR): ASTM A500, GRADE B.
   - D. BOLTS: ASTM A325-N, 3/4" DIAMETER UNLESS NOTED.
   - E. ANCHOR RODS: ASTM A36 OR ASTM F1554, MIN Fy = 36 KSI.
   - F. FIELD WELDS: AWS E70XX, LOW HYDROGEN ELECTRODES.
   - G. NON-SHRINK NON-METALLIC GROUT: CRD-C-621 AND ASTM C1107 FOR INTERIOR AND EXTERIOR APPLICATIONS. FLUID TYPE.
     1. FOR GROUT IN EXTERIOR APPLICATIONS, SUCH AS GUARDRAIL ANCHORAGE, LIMIT GYPSUM CONTENT TO 1.5% MAXIMUM.
8. PAINT AND PROTECTION:
   - A. STRUCTURAL STEEL UNLESS NOTED: PREPARE STEEL SURFACES PER SSPC-SP3 "POWER TOOL CLEANING" AND PAINT WITH FABRICATOR'S STANDARD PRIME COAT, SUCH AS TNEMEC 10-1009. TOUCH UP AFTER ERECTION.
   - B. PROVIDE MINIMUM 3" CONCRETE COVER FOR ALL STEEL BELOW GRADE.
   - C. LINTELS SUPPORTING EXTERIOR MASONRY WYTHES AND MEMBERS EXPOSED TO WEATHER IN FINISHED STRUCTURES: BLAST STEEL CLEAN PER SSPC-SP6 "COMMERCIAL BLAST CLEANING". PRIME WITH ZINC RICH PRIMER PORTER PORTERZINC 3000 OR TNEMEC 90-97 TNEMEZINC, DRY FILM THICKNESS 2.5 MILS AND FINISH PAINT 2 COATS ALIPHATIC POLYURETHANE PORTER PORTERTHANE 9000 SERIES. SUBSTITUTES MAY BE CONSIDERED; SUBMIT MANUFACTURER'S DATA PRIOR TO PAINTING.
9. CONTRACTOR SHALL SUBMIT ERECTION AND SHOP DRAWINGS FOR REVIEW BY ENGINEER. FABRICATION SHALL NOT BEGIN PRIOR TO SHOP DRAWING APPROVAL BY ENGINEER.
10. CONTRACTOR SHALL SUBMIT MISCELLANEOUS STEEL SHOP DRAWINGS FOR REVIEW BY ENGINEER. FABRICATION SHALL NOT BEGIN PRIOR TO SHOP DRAWING APPROVAL BY ENGINEER. MISCELLANEOUS STEEL SHOP DRAWINGS SHALL INCLUDE STAIRS, GUARDRAILS, AND LADDERS. MISCELLANEOUS STEEL SHOP DRAWINGS SHALL BEAR THE SEAL OF A PROFESSIONAL ENGINEER WHO IS REGISTERED IN THE STATE THE PROJECT OCCURS, AND WHO IS PROVIDING SERVICES AS A SPECIALTY ENGINEER.
11. A VERTICAL STABILIZER PLATE SHALL BE PROVIDED ON EACH COLUMN FOR STEEL JOISTS AND JOIST GIRDERS. THE STABILIZER PLATE SHALL BE A MINIMUM OF 6-INCHES BY ½-INCHES, SHALL EXTEND A MINIMUM OF 3-INCHES BELOW THE BOTTOM OF THE BOTTOM CHORD, AND SHALL EXTEND A MINIMUM OF 1-INCH ABOVE THE TOP OF THE BOTTOM CHORD. THE PLATE IS REQUIRED TO HAVE A 13/16 INCH DIAMETER HOLE TO PROVIDE AN ATTACHING POINT FOR GUYING CABLES.
12. AT COLUMNS, BEAMS FRAMING INTO THE OPPOSITE SIDES OF THE SAME GIRDER OR COLUMN WEB SHALL HAVE EITHER ERECTION SEAT ANGLES OR SHALL HAVE SHEAR CONNECTIONS THAT ALLOW ERECTION OF EACH BEAM INDEPENDENTLY WITH AT LEAST ONE NON-COMMON BOLT.
13. WHERE JOISTS AND JOIST GIRDERS BEAR ON STEEL BEARING PLATES AND COLUMN CAP PLATES, FABRICATOR SHALL VERIFY THAT SUPPORTING ELEMENTS ARE WIDER THAN THE JOIST OR JOIST GIRDER SEAT SUCH THAT SPECIFIED FILLET WELDS CAN BE INSTALLED. WHERE FABRICATOR FINDS SUPPORTING ELEMENTS ARE NOT WIDER THAN JOIST OR JOIST GIRDER SEAT, FABRICATOR SHALL CONTACT ENGINEER FOR DIRECTION.

STEEL JOISTS

1. THE DESIGN, FABRICATION, AND ERECTION OF STEEL JOISTS AND JOIST GIRDERS SHALL CONFORM TO THE REQUIREMENTS OF THE LATEST EDITION OF THE SPECIFICATIONS ADOPTED BY THE STEEL JOIST INSTITUTE.
2. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW BY ENGINEER. FABRICATION SHALL NOT BEGIN PRIOR TO SHOP DRAWING APPROVAL BY ENGINEER.
3. JOIST MANUFACTURER SHALL DESIGN THE JOISTS AND JOIST GIRDERS FOR A NET UPLIFT AS SHOWN ON ROOF FRAMING SHEETS. JOIST MANUFACTURER SHALL PROVIDE ADDITIONAL BRIDGING AS REQUIRED TO BRACE JOISTS AND GIRDERS SUBJECT TO NET UPLIFT.
4. CONNECTIONS
   - A. WELD EACH SIDE OF ALL K-SERIES JOISTS TO SUPPORTING STEEL WITH 2 INCHES OF 1/8 INCH FILLET WELD.
   - B. WELD EACH SIDE OF ALL LH-SERIES JOISTS TO SUPPORTING STEEL WITH 2 INCHES OF 1/4 INCH FILLET WELD.
   - C. K-JOISTS AT COLUMNS AND K-JOISTS IN BAYS OF 40 FEET AND LONGER TO HAVE (2) ½" DIAMETER A307 ERECTION BOLTS. LH & DLH-JOISTS AT COLUMNS AND LH & DLH-JOISTS IN BAYS OF 40 FEET AND LONGER TO HAVE (2) ¾" DIAMETER A325 ERECTION BOLTS. EXCEPT AT COLUMNS, ERECTION BOLTS ARE NOT REQUIRED WHERE JOISTS AND BRIDGING HAVE BEEN PRE-ASSEMBLED INTO PANELS.
   - D. WELD EACH SIDE OF JOIST GIRDERS TO SUPPORTING STEEL WITH 2 INCHES OF 1/4 INCH FILLET WELD. JOIST GIRDERS SHALL HAVE (2) ¾" DIAMETER A325 ERECTION BOLTS.
5. JOISTS SHALL HAVE MINIMUM BRIDGING AS REQUIRED BY THE SJI AND AS OTHERWISE NOTED ON THE STRUCTURAL DRAWINGS. ALL BRIDGING RUNS AND DETAILS SHALL BE SHOWN ON JOIST SHOP DRAWINGS. FOR JOIST SPANS EXCEEDING OSHA TABLES A AND B FROM SUBPART R-STEEL ERECTION 1926.757, INSTALL A LINE OF BOLTED X-BRIDGING NEAR MID-SPAN PRIOR TO SLACKING HOIST LINES. FOR JOISTS BETWEEN 60 FEET AND 100 FEET, TWO LINES OF BOLTED X-BRIDGING SHALL BE INSTALLED NEAR THE THIRD POINTS OF THE JOIST PRIOR TO SLACKING HOIST LINES.
6. PLACE ADDITIONAL X-BRIDGING AT THE END OF EACH HORIZONTAL BRIDGING RUN IN LAST SPACE BETWEEN JOISTS, EXCEPT WHERE HORIZONTAL BRIDGING RUNS TERMINATE AT MASONRY OR CONCRETE WALLS. WHERE BRIDGING RUNS TERMINATE AT MASONRY OR CONCRETE WALLS, HORIZONTAL BRIDGING SHALL BE ANCHORED TO WALL.
7. NO MODIFICATION THAT AFFECTS THE STRENGTH OF A JOIST OR JOIST GIRDER SHALL BE MADE WITHOUT THE APPROVAL OF THE PROJECT STRUCTURAL ENGINEER OF RECORD.
8. WHERE JOISTS DO NOT CONNECT DIRECTLY TO THE COLUMN CAP PLATE, AT THE JOIST CLOSEST TO EACH COLUMN, PROVIDE DIAGONAL L2X2X3/16. ANGLE SHALL BE WELDED TO TOP OF COLUMN OR TO BOTTOM FLANGE OF BEAM AND TO THE FIRST TOP CHORD PANEL POINT OF JOIST WITH 2 INCH OF 1/8 INCH FILLET EACH END. ANGLE SHALL BE SUPPLIED BY THE STRUCTURAL STEEL FABRICATOR.
9. EXTEND BOTTOM CHORD OF ALL JOIST GIRDERS AND ALL JOISTS AT OR NEAREST COLUMN LOCATIONS TO LAP WITH STABILIZER PLATE.
10. WHERE STEEL JOISTS AT OR NEAR COLUMNS SPAN MORE THAN 60 FEET, THE JOISTS SHALL BE SET IN TANDEM WITH ALL BRIDGING INSTALLED.
11. UNLESS NOTED OTHERWISE, K-SERIES JOISTS SHALL HAVE 2 ½" DEEP SEATS, AND LH-SERIES JOISTS SHALL HAVE 5" DEEP SEATS. PROVIDE MATCHING HEIGHT SEATS ON SHORT SPAN JOISTS WHICH HAVE COMMON BEARING WITH LONG SPAN JOISTS.
12. JOIST GIRDERS SHALL HAVE 7 1/2" DEEP SEATS.
13. JOIST MANUFACTURER SHALL DESIGN JOIST SEATS AT BEARING WALLS FOR LATERAL ROLLOVER FORCE OF 1650 LBS. DUE TO WIND.

METAL DECKING

1. THE DESIGN, FABRICATION, AND ERECTION OF ALL STEEL DECK SHALL CONFORM TO THE REQUIREMENTS OF THE LATEST EDITION OF THE SPECIFICATIONS OF THE STEEL DECK INSTITUTE.
2. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW BY ENGINEER. FABRICATION SHALL NOT BEGIN PRIOR TO SHOP DRAWING APPROVAL BY ENGINEER.
3. MATERIALS:
   - A. ROOF DECK: SEE PLAN AND METAL DECK SCHEDULE FOR SIZE, GAGE, MIN Fy, AND REQUIRED SUPPORT FASTENERS AND SIDELAP FASTENERS. PAINT WITH STANDARD SHOP COAT UNLESS NOTED OTERHWISE ON DRAWINGS.
   - B. DECK FOR CONCRETE FORM: SEE PLAN AND METAL DECK SCHEDULE FOR SIZE, GAGE, MIN Fy, AND REQUIRED SUPPORT FASTENERS AND SIDELAP FASTENERS. GALVANIZED COATING CONFORMING TO ASTM A653 G60.
   - C. SELF DRILLING SCREWS (SDS): HEX WASHER HEAD SELF-DRILLING TAPPING SCREWS (ASTM C1513) MANUFACTURED FROM CARBON STEEL (ASTM A510, MIN GRADE 1018). ZINC PLATING SHALL MEET MINIMUM CORROSION RESISTANCE REQUIREMENTS OF ASTM F1941.
4. CONNECT DECK TO SUPPORTS PER DETAILS ON DRAWING S5.1.
5. METAL DECK SHALL BE PROVIDED TO RUN CONTINUOUS OVER AT LEAST 3 SPANS EXCEPT AS NOTED OTHERWISE.
6. CONNECT METAL DECK TO STRUCTURAL MEMBERS, INCLUDING PERIMETER ANGLES.
7. MINIMUM METAL DECK END BEARING ON SUPPORTS = 1 1/2".
8. LAP ENDS OF ROOF DECK AND CONCRETE FORM DECK 4" MINIMUM.
9. WELDING OF METAL DECK SHALL BE IN ACCORDANCE WITH AWS D1.3.

COLD-FORMED STEEL FRAMING

1. WORK SHALL MEET THE REQUIREMENTS OF THE FOLLOWING STANDARDS:
   - A. AMERICAN IRON AND STEEL INSTITUTE (A.I.S.I.) "STANDARD FOR COLD-FORMED STEEL FRAMING – GENERAL PROVISIONS", LATEST EDITION.
   - B. AMERICAN WELDING SOCIETY (A.W.S.) D1.3, "STRUCTURAL WELDING CODE-SHEET STEEL."
2. MATERIALS:
   - A. STRUCTURAL FRAMING MEMBERS 54 MILS (16 GAGE) & HEAVIER: ASTM A1003 & C955, Fy MINIMUM = 50 KSI, G60 GALVANIZED COATING.
   - B. STRUCTURAL FRAMING MEMBERS 43 MILS (18 GAGE) & LIGHTER: ASTM A1003 & C955, F_y MINIMUM = 33 KSI, G60 GALVANIZED COATING.
   - C. COLD-FORMED STEEL STUDS FOR BRICK VENEER BACKUP: 43 MILS (18 GAGE) MINIMUM THICKNESS. G90 GALVANIZED COATING.
   - D. STRAP BRACING: ASTM A1003 & C955, Fy = 50 KSI MINIMUM, G60 GALVANIZED COATING.
   - E. ALL TRACK & BRIDGING: F_y = 33 KSI MINIMUM, ASTM A1003 & C955, G60 GALVANIZED COATING.
   - F. SELF DRILLING SCREWS (SDS):
     1. HEX OR PHILLIPS WASHER HEAD SELF DRILLING TAPPING SCREWS (ASTM C1513) MANUFACTURED FROM CARBON STEEL (ASTM A 510, MIN GRADE 1018). ZINC PLATING SHALL MEET MINIMUM CORROSION RESISTANCE REQUIREMENTS OF ASTM F1941. SIZE AND SPACING AS NOTED ON DRAWINGS.
     2. UNLESS NOTED OTHERWISE, SCREWS IN STEEL TO STEEL CONNECTIONS SHALL HAVE A MINIMUM EDGE DISTANCE & SPACING OF 3 TIMES THE NOMINAL SCREW DIAMETER.
     3. SCREWS ALONG THE EDGES OF WALL SHEATHING SHALL BE PLACED A MINIMUM OF 3/8" FROM THE SHEATHING EDGES.
     4. SCREWS SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE STEEL CONNECTION A MINIMUM OF 3 EXPOSED THREADS, AND SHALL PENETRATE INDIVIDUAL COMPONENTS OF CONNECTIONS WITHOUT CAUSING PERMANENT SEPARATION BETWEEN COMPONENTS.
   - G. WELDING ELECTRODES: E60XX, WELD SIZE AS NOTED ON STRUCTURAL DRAWINGS.
   - H. SLIDE CLIPS:
     1. VERTICAL BYPASS SLIDE CLIPS FOR NON-LOADBEARING WALLS: "VERTICLIP SLB", 68 MILS (14 GAGE) MIN., 50 KSI, MANUFACTURED BY THE STEEL NETWORK, INC. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. SUBSTITUTES MAY BE CONSIDERED, SUBMIT MANUFACTURER'S DATA PRIOR TO INSTALLATION.
     2. VERTICAL NON-BYPASS SLIDE CLIPS FOR NON-LOADBEARING WALLS: "VERTICLIP SL", 68 MILS (14 GAGE) MIN., 50 KSI, MANUFACTURED BY THE STEEL NETWORK, INC. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. SUBSTITUTES MAY BE CONSIDERED. SUBMIT MANUFACTURER'S DATA PRIOR TO INSTALLATION.
   - I. STUD CLIPS: "STIFFCLIP LB" SERIES, 68 MILS (14 GAGE) MIN., 50 KSI, MANUFACTURED BY THE STEEL NETWORK, INC. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. SUBSTITUTES MAY BE CONSIDERED, SUBMIT MANUFACTURER'S DATA PRIOR TO INSTALLATION.
   - J. MOMENT CLIPS: STIFFCLIP CL 68 MIL (14 GAGE) (H) MANUFACTURED BY THE STEEL NETWORK, INC. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. SUBSTITUTES MAY BE CONSIDERED, SUBMIT MANUFACTURER'S DATA PRIOR TO INSTALLATION.
3. CONNECT ALL SLIDE CLIPS AND STUD CLIPS TO STRUCTURAL STEEL FRAMING WITH (2) POWDER DRIVEN FASTENERS (TYPE X-U NAIL, 0.157" DIAMETER, QUALIFIED PER ICC-ES ESR-2269) OR (2) #12-24, TEK 5 SELF DRILLING FASTENERS UNLESS NOTED OTHERWISE IN SECTION. CONNECT ALL SIDE CLIPS AND STUD CLIPS TO GROUTED MASONRY WALLS WITH ½" DIAMETER, 2-½" EMBED EXPANSION ANCHORS UNLESS NOTES OTHERWISE IN SECTION. CONNECTION TO COLD-FORMED STEEL MEMBERS PER MANUFACTURER'S RECOMMENDATIONS.
4. CONNECT ALL MOMENT CLIPS TO STRUCTURAL STEEL FRAMING WITH (2) POWDER DRIVEN FASTENERS (TYPE X-U NAIL, 0.157" DIAMETER, QUALIFIED PER ICC-ES ESR-2269) OR (2) #12-24, TEK 5 SELF DRILLING FASTENERS. LOCATE FASTENERS IN OUTER PREDRILLED HOLES PROVIDED BY MANUFACTURER OF MOMENT CLIP.
5. CUT ALL FRAMING COMPONENTS SO THEY FIT SQUARELY TOGETHER. STUDS MUST BEAR TIGHT AGAINST TRACK WEB. MEMBERS SHALL BE HELD POSITIVELY IN PLACE UNTIL PROPERLY FASTENED. BRACE WALL COMPONENTS AS REQUIRED DURING ERECTION TO PREVENT RACKING AND DISTORTION.
6. ALL FRAMING SHALL BE THE COMPONENTS SPECIFIED ON THE STRUCTURAL DRAWINGS AS MANUFACTURED IN ACCORDANCE WITH THE INDICATED STEEL STUD MANUFACTURERS ASSOCIATION (SSMA) SIZE, STYLE, AND MATERIAL THICKNESS. UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS, ALL FRAMING MEMBERS SHALL BE C-SECTIONS WITH 1-5/8" FLANGE WIDTH, AND ALL TRACK SHALL HAVE 1-1/4" FLANGE WIDTH.
7. PRIOR TO THE START OF INSTALLATION OF COLD-FORMED STEEL FRAMING SYSTEMS, MEET AT THE PROJECT SITE WITH THE INSTALLERS OF OTHER WORK INCLUDING DOOR AND WINDOW FRAMES, MECHANICAL, STRUCTURAL AND ELECTRICAL WORK. REVIEW AREAS OF POTENTIAL INTERFERENCE AND CONFLICTS. COORDINATE LAYOUT AND SUPPORT PROVISIONS FOR INTERACTING WORK.
8. FASTEN EACH STUD AT EACH FLOOR LEVEL, HORIZONTAL GIRT AND ROOF LEVEL UNLESS NOTED OTHERWISE ON DRAWINGS. SEE DRAWINGS FOR TYPE OF CLIP TO INSTALL.
9. FASTENING OF COMPONENTS SHALL BE WITH SELF-DRILLING TAPPING SCREWS OR WELDING. ALL WELDED CONNECTIONS SHALL BE MADE BY WELDERS CERTIFIED FOR WELDING MEMBERS OF GAGE BEING USED PER AWS D1.3.
10. BRIDGING REQUIREMENTS FOR BEARING AND NON-BEARING INTERIOR WALLS: MINIMUM BRIDGING 1 1/2" "C" CHANNEL WITH 1-1/2" X 1-1/2" X 54 MILS (16 GAGE) CLIP ANGLES AT EACH STUD.
    - A. WALLS UP TO 10 FEET HIGH:
      1. BEARING WALLS: TWO ROWS AT THIRD POINTS.
      2. NON-BEARING EXTERIOR WALLS: ONE ROW AT MID-HEIGHT.
    - B. WALLS OVER 10 FEET HIGH:
      1. BEARING WALLS: ROWS SPACED AT 4'-0" MAXIMUM.
      2. NON-BEARING EXTERIOR WALLS: ROWS SPACED AT 5'-0" ON CENTER MAXIMUM.
11. LOCATE JOIST BRIDGING AT 5'-0" MAXIMUM SPACING FOR FLANGES 1 5/8" AND NARROWER. LOCATE JOIST BRIDGING AT 7'-0" MAXIMUM SPACING FOR FLANGES WIDER THAN 1 5/8". USE 54 MILS (16 GAGE) SOLID BRIDGING (NOT LESS THAN 2" NARROWER THAN JOIST) IN FIRST TWO AND LAST TWO JOIST SPACES. BETWEEN END SPACES INSTALL STRAP BRACING 2" X 54 MILS (16 GAGE) TOP & BOTTOM FOR 8'-0" RUN, THEN ONE SOLID 54 MILS (16 GAGE) BRIDGING IN SPACE, REPEATED AS REQUIRED.

WOOD SHEATHING

1. MATERIALS:
   - A. ROOF SHEATHING: 19/32" APA FRT SPAN RATING 40/20 ROOF SHEATHING EXPOSURE 1. INSTALL PANEL CLIP AT MIDSPAN OF EACH TRUSS/RAFTER SPACE ALONG UNSUPPORTED SHEATHING EDGES.
   - B. WALL SHEATHING: 7/16" APA FRT SPAN RATING 24/16 WALL SHEATHING EXPOSURE 1.
2. CONNECTIONS: ALL SHEATHING SHALL BE SCREWED TO LIGHT GAGE METAL FRAMING WITH SELF-DRILLING SCREWS AT 6" ON CENTER AT PANEL EDGES, AND 12" ON CENTER AT INTERMEDIATE ROOF AND FLOOR SUPPORTS, UNLESS NOTED OTHERWISE. USE #10 SCREW FOR STEEL THICKNESS UP TO 0.135" AND #12 SCREW FOR STEEL THICKNESS UP TO 0.25".

SPECIAL INSPECTIONS FOR STRUCTURAL WORK

1. SPECIAL INSPECTIONS ARE REQUIRED FOR THIS PROJECT. THE OWNER OR THE DESIGN PROFESSIONAL REPRESENTING THE OWNER IS RESPONSIBLE FOR EMPLOYING A QUALIFIED SPECIAL INSPECTOR. ALL REPORTS SHALL BE FORWARDED TO SEOR WITHIN 5 DAYS OF VISIT.
2. THE AREAS OF CONSTRUCTION REQUIRING SPECIAL INSPECITON ARE LISTED BELOW AND MAY NOT BE LIMITED TO THE FOLLOWING:
   - A. CONCRETE & FOUNDATIONS:
     1. PERIODIC INSPECTION FOR SIZE & PLACEMENT OF FOUNDATION REINFORCING STEEL.
     2. CONTINUOUS INSPECTION OF SIZE AND PLACEMENT OF ANCHOR RODS.
     3. CONTINUOUS INSPECTION FOR SAMPLING FRESH CONCRETE AND PERFORMING SLUMP AND AIR CONTENT MEASUREMENTS AT TIME OF MAKING SPECIMENS FOR STRENGTH TESTS.
     4. PERIODIC INSPECTION TO VERIFY MATERIAL BELOW FOUNDATIONS IS ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY AND IS CONSISTENT WITH GEOTECHNICAL ENGINEER'S REPORT. INSPECT REMOVAL OF UNSUITABLE MATERIAL.
     5. PERIODIC INSPECTION TO VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL, AND ARE CONSISTENT WITH RECOMMENDATIONS IN GEOTECHNICAL ENGINEER'S REPORT.
   - B. STEEL:
     1. PERIODIC INSPECTION OF HIGH STRENGTH BOLTS TIGHTENED BY TURN OF THE NUT METHOD. (I.E. SNUG TIGHT).
     2. PERIODIC INSPECTION OF STEEL FRAME JOINTS FOR COMPLIANCE WITH CONTRACT DOCUMENTS.
     3. CONTINUOUS INSPECTION OF EPOXY ANCHORS PER MANUFACTURERS RECOMMENDATIONS.
     4. PERIODIC INSPECTION FOR INSTALLATION OF METAL ROOF DECK AND CONNECTIONS TO SUPPORTING STEEL.
     5. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL SPECIAL INSPECTION REQUIREMENTS.
   - C. MASONRY:
     1. PERIODIC INSPECTION OF WALL REINFORCING SIZE AND PLACEMENT PRIOR TO GROUTING.
     2. PERIODIC INSPECTION OF PROTECTION OF MASONRY DURING HOT AND COLD WEATHER AS DEFINED BY ACI 530.
     3. PERIODIC INSPECTION OF GROUT SPACE IS CLEAN.
     4. PERIODIC INSPECTION OF GROUTING TECHNIQUES.

ABBREVIATIONS

ARCH = ARCHITECT
B/ = BOTTOM OF
BOT = BOTTOM
BLDG = BUILDING
BRG = BEARING
CFS = COLD-FORMED STEEL
CJ = CONTRACTION JOINT
CL = CENTER LINE
CLR = CLEAR
CMU = CONCRETE MASONRY UNIT
COL = COLUMN
CONC = CONCRETE
CONT = CONTINUOUS
DIA OR ø = DIAMETER
DEG OR ° = DEGREE
EA = EACH
EF = EACH FACE
EL = ELEVATION
EMB = EMBEDMENT
EOS = EDGE OF SLAB
EQ = EQUAL
EXIST = EXISTING
EXP = EXPANSION
FDN = FOUNDATION
FS = FAR SIDE
FTG = FOOTING
GA = GAGE
GALV = GALVANIZED
GT = GIRDER TRUSS
HORIZ = HORIZONTAL
JST BRG = JOIST BEARING
Ld = TENSION DEVELOPMENT LENGTH OF REINFORCING BAR IN CONCRETE
Ldc = COMPRESSION DEVELOPMENT LENGTH OF REINFORCING BAR IN CONCRETE
Ldh = HOOKED BAR TENSION DEVELOPMENT LENGTH OF REINFORCING BAR IN CONCRETE
Ls = LAP SPLICE LENGTH OF REINFORCING BAR IN CONCRETE
Lsc = COMPRESSION LAP SPLICE LENGTH OF REINFORCING BAR IN CONCRETE
Ld-CMU = TENSION DEVELOPMENT LENGTH OF REINFORCING BAR IN GROUTED CMU
Ls-CMU = LAP SPLICE LENGTH OF REINFORCING BAR IN GROUTED CMU
LDH = LONG DIMENSION HORIZONTAL
LDV = LONG DIMENSION VERTICAL
LLH = LONG LEG HORIZONTAL
LLV = LONG LEG VERTICAL
LSL = LAMINATED STRAND LUMBER
LVL = LAMINATED VENEER LUMBER
MCJ = MASONRY CONTROL JOINT
MFR = MANUFACTURER
NS = NEAR SIDE
NTS = NOT TO SCALE
oc = ON CENTER
OPNG = OPENING
PDF = POWDER DRIVEN FASTENER
PE = PRE-ENGINEERED
PL = PLATE
PSL = PARALLEL STRAND LUMBER
PT = PRESSURE TREATED
P/T = POST TENSION
RD = ROOF DRAIN
REINF = REINFORCING
RTU = ROOF TOP UNIT
SDS = SELF-DRILLING SCREW
SIM = SIMILAR
SIP = STRUCTURAL INSULATED PANEL
SL = STEP LEDGE
SPA = SPACE OR SPACES
SRD = SECONDARY ROOF DRAIN
STIFF = STIFFENER
STL = STEEL
STW = STEP TOP OF WALL
T/ = TOP OF
TYP = TYPICAL
UNO = UNLESS NOTED OTHERWISE
VB = VERTICAL BRACING
VERT = VERTICAL
VIF = VERIFY IN FIELD
w/ = WITH
WP = WORK POINT

LEGEND

SYMBOL	DESCRIPTION	REFERENCE
n (circle)	COLUMN LINE DESIGNATION	
n (diamond)	FACE OF BUILDING	
Ln	LINTEL MARK	SHEET S5.1
n (hexagon)	FTG OR GRADE BEAM MARK	SHEET S5.1
BPn	BASE PL MARK	SHEET S5.1
Cn	COLUMN MARK	SHEET S5.1
Wn	MASONRY VERTICAL WALL REINFORCING MARK	SHEET S5.1
Kn	KEYNOTE MARK	SEE PLAN
(arrow)	STEP T/FTG	SHEET S3.1
Dn	DECK MARK	SHEET S5.1
(target)	ELEVATION INDICATION	
JdN (Tld/Lld)	STEEL JOIST DESIGNATION Jd - JOIST DEPTH (INCHES) N - LH OR K JOIST TYPE Tld - TOTAL LOAD (PLF) Lld - LIVE LOAD (PLF)	

CR architecture + design
creating extraordinary places
www.cr-architects.com
800.469.4949

CINCINNATI 600 Vine Street, Suite 2210 Cincinnati, OH 45202 P 513.721.8080
DENVER 1675 Broadway, Suite 2480 Denver, CO 80202 P 800.469.4949
DALLAS 750 North St Paul Street, Dallas, TX 75201 P 800.469.4949
MINNEAPOLIS 333 South Seventh Street, Suite 290, Minneapolis, MN P 800.469.4949
SEATTLE 506 2nd Avenue suite 2800 Seattle, WA P 800.469.4949

CONSULTANTS
STRUCTURAL ENGINEERS
800.542.3302
schaefer-inc.com
schaefer

MODELER: SMD
ENGINEER: BMS
PROJECT NUMBER: 1829.12

OWNER
Kroger

DATE	ISSUE
10/23/2018	90% OWNER REVIEW
11/01/2018	100% / BID / PERMIT

#	DATE	REVISION

PROJECT TITLE
Kroger Store
R543

1050 W. Mercury Blvd
Hampton, VA

COMMISSION NO. 518344
ISSUE DATE 11/01/2018
SHEET TITLE
STRUCTURAL GENERAL NOTES

SHEET NO.
S0.1